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### Bignoniaceae of Tropical North America

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AMPHITECNA AND ENALLAGMA. The tribe Crescentieae of the Bignoniaceae in America, according to Schumann in Engler & Prantl, Pflanzenfamilien IV, 3B; 244. 1895, consists of five genera, the best known of which is *Crescentia*. The genus *Schlegelia* is an anomaly in the Bignoniaceae and I have transferred it to Scrophulariaceae for the "Flora of Guatemala." *Parmentiera* is easily distinguished from the other genera of the tribe but the three remaining, *Crescentia*, *Amphitecna*, and *Enallagma*, are closely related. *Crescentias* are fairly distinctive trees and the large globose or ovoid fruits are 1-celled. The fruits of *Amphitecna* are said to be 2-celled while those of *Enallagma* are said to be 1-celled or incompletely 2-celled. There are certainly more species of the *Amphitecna-Enallagma* complex than had been previously distinguished. Several of these are without known fruits and even of those for which I have good fruits it is difficult if not impossible to be sure whether the fruit is 1- or 2-celled.

With the several species now distinguished in the *Amphitecna-Enallagma* complex and the greater number of collections available I find that the characters presumed to distinguish the two genera break down completely and I am obliged to combine them. Dr. Seibert in his "Bignoniaceae of the Maya Area" (Carnegie Inst. Wash. Publ. 522: 380-381. 1940) calls attention to this possibility, but had insufficient material for study. Our material is still insufficient, and probably always will be, but there is now three times as much material as Dr. Seibert saw before 1940.

There are, at least, one or two more species in the herbaria which are not accounted for here. Better material for them is desirable.

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**Amphitecna donnell-smithii** (Sprague) L. Wms. comb. nov.  
*Crescentia donnell-smithii* Sprague Bull. Herb. Boiss. II. 6: 376. 1906.  
*Enallagma donnell-smithii* Standl. Field Mus. Bot. 12: 361. 1936.

The smallest flowered species of *Amphitecna*, known only from the Caribbean lowlands of Guatemala and British Honduras.

**Amphitecna molinae** L. Wms. sp. nov.

Frutices aut arbusculae usque ad 6 m. Folia alterna vel subfasciculata oblanceolata acuminata breviter petiolata chartacea vel coriacea; inflorescentia terminalis fasculo bifloro, pediceli 2.5–3 cm. longi basi bibracteolati; calyx anguste campanulatus trilobatus lobi ovati acuti; corolla alba infundibuliformis lobato-crenata; fructus cortice crasso.

Shrub or weak tree 2–6 m. tall, the young branches striate, becoming terete, grayish-white, glabrous. Leaves alternate or clustered toward the apices of young branches, oblanceolate, acuminate, short-petiolate, lateral nerves 15–25 pairs at about 80° angle from mid-nerve, glabrous, the blades chartaceous becoming coriaceous with age, 8–17 cm. long and 2–6.5 cm. broad, the petiole to 1 cm. long; inflorescence terminal, a fascicle of 2 flowers (on type); pedicels about 2.5–3 cm. long, bibracteolate to near the base; calyx narrowly campanulate, divided to about the middle and trilobate, about 2.5 cm. long at anthesis, the lobes ovate, acute, about 1 cm. long; the corolla white, infundibuliform, lobate-crenate, to about 5 cm. long; fruits with heavy shell 2–5 mm. thick, elliptic-oblong to ovate, attenuate-acuminate to the apex, smooth, to 15 cm. long and 5.5–6.5 cm. in diameter.

Honduras: flowers white, weak tree to 6 m. along river, open forest of Quebrada Lejarsia between kms. 9–11 on road La Esperanza-Marcala, dept. Intibucá, alt. 1,600 m., March 21, 1969, *Molina & Molina* 24295 (type F, EAP); with the same data, *Molina & Molina* 24299 (F, EAP).

This small tree is easily distinguished from others of the genus by the trilobate calyces, the thick and durable shell of the fruit, the relatively small leaves with numerous lateral nerves. The species memorializes the Molinas who have collected assiduously in Central America for some 25 years. It is a highland species of the montane forest.

**Amphitecna montana** L. Wms. sp. nov.

Arbores usque ad 15 m. altae, ramuli angulati vel teres glabri. Folia alterna oblanceolata vel anguste obovato-elliptica acuminata basi cuneata longiusculopetiolata glabra subcoriacea; inflorescentiae uniflorae; flores pendentes pediceli graciles; calyx carnosus coriaceus bilobatus aut trilobatus basi circumscissilis; corolla campanulata leviter crenulato-lobata leviter zygomorpha; fructus elliptico-ovoideus fragilis; semina crassa carnosae.

Small forest trees 10–15 m. tall the branches angulate at first becoming terete with age, glabrous. Leaves alternate and scattered along the branches or some-



times clustered toward the apex, oblanceolate to narrowly obovate-elliptic, acuminate, cuneate to the base and rather long petiolate (for genus), with 15–20 prominent lateral nerves anastomosing toward the margins, blades subcoriaceous, 12–30 cm. long and 3–10 cm. broad, the petioles mostly 2–4 cm. long; inflorescences of single flowers in axils of leaves; flowers pendent, the pedicel slender, to about 10 cm. long; calyx fleshy, coriaceous, bilobate or possibly also trilobate to the middle, about 3 cm. long, circumscissile at the base and falling away leaving the pedicel and young ovary; corolla light green, narrowly campanulate, shallowly crenate-lobate, slightly zygomorphic, about 4.5 cm. long and about 2.5 cm. broad at throat; fruits oblongoid or elliptic-ovoid, to 15 cm. long and 8 cm. in diameter, shell thin and fragile, the flesh hard and slightly bitter; seeds thick and the cotyledons fleshy, notched at both top and bottom, about 18 mm. broad, 12 mm. high, and 8–10 mm. thick.

Guatemala: tree 50 ft. tall, flowers pendent, easily separating from pedicel which likewise easily separates from stem pedicel or branch, corolla pale greenish-yellow, anthers dull blackish brown; mixed hardwood pine woods bordering barranco half way up slopes of barranco, barrancos 6 miles south and west of town of Tajumulco, northwestern slopes of Volcán Tajumulco, dept. San Marcos, alt. 2,300–2,800 m., Feb. 26, 1940, *Steyermark 36704* (type two sheets, F); tree 12 m. tall, large fruits elliptic-ovate, about 15 cm. long and 8 cm. in diameter, pulp surrounding seeds white, flowers white; montane cloud forest area on outer slopes of Tajumulco Volcano, Sierra Madre Mountains about 8–10 km. west of San Marcos, dept. San Marcos, alt.  $\pm$  2,300 m., Dec. 31, 1964—Jan. 1, 1965, *Williams et. al. 26915*.

Mexico: Siltepec, Chiapas, enero 1938, *Matuda 1947*; Mt. Ovando, Escuintla, Chiapas, 1–16 July 1940, *Matuda 4206*.

Sterile collections from Dept. San Marcos, Guatemala probably this species are: *Steyermark 36987, 37012*; *Standley 86200*.

This is a montane species distinguished by the large petiolate leaves, the long slender pedicels of the flowers and the curious calyx circumscissile at the base. The fruit is perhaps the largest among the species of Guatemala and the shell very fragile. The species has been determined as "*Enallagma sessilifolia*" in all cases, a montane species of Costa Rica to which it is allied.

### ***Amphitecna oblanceolata* L. Wms. sp. nov.**

Frutices vel arbusculae usque ad 10 m., ramuli graciles, teretes vel angulati albid. Folia oblanceolata vel elliptico-oblanceolata acuminata basi cuneata glabra petioli perbreves; inflorescentia terminalis vulgo uniflora; calyx bilabiatus, ca. 2 cm. longus, lobi oblongo-ovati vel anguste obovati obtusi; corolla campanulato-infundibuliformis zygomorpha 5-lobata; fructus anguste ovato-cylindricus.

Shrubs or small trees to 10 m. tall. Branches slender, terete or angulate, whitish, glabrous. Leaves oblanceolate or elliptic-oblanceolate, acuminate, cuneate to the base, glabrous, secondary nerves 10–15 pairs at nearly a right angle to midnerves, the tips anastomosing, the blade often with small plate-shaped glands, 9–25 cm. long and 2–7 cm. broad, petiole very short, 2–8 mm. long; inflorescence terminal on young branches, mostly a single pedicellate flower, the pedicel 2–3 cm. long; calyx bilabiate at anthesis, 1.5–2 cm. long and 0.5–0.8 cm. broad at the base, the lobes broadly oblong-ovate to narrowly obovate, obtuse; corolla campanulate-funnelform, zygomorphic, 5-lobate, 2.5–4.5 cm. long; fruit narrowly ovate-cylindric, probably more than 15 cm. long and about 3.5–5 cm. in diameter; seeds (nearly mature) immersed in the whitish pulp, subreniform in outline with the embryo at the center and with lateral wings thin and obtuse.

Guatemala: Río Chacón, Izabal, Feb. 10, 1921, *Johnson 1241*; shrub, between Bananera and “La Presa” in Montaña del Mico, Izabal, alt. 40–300 m., March 28, 1940, *Steyermark 38210*; at base of waterfall, small tree 30 ft. tall, between Bananera and “La Presa” in Montaña del Mico, Izabal, alt. 50–150 m., April 9, 1940, *Steyermark 39199*; tree 30 ft. tall, wooded slopes, along Río Frío, Izabal, alt. 75 m., Dec. 17, 1941, *Steyermark 39944*; tree 30 ft. tall, corolla creamy-greenish with green calyx, along Río Frío and tributaries, Izabal, alt. 75–150 m., Dec. 18, 1941, *Steyermark 41587*; shrub 8 ft. tall, Finca Yalpemech near Alta Verapaz-Petén boundary line, alt. 100–150 m., March 23, 1942, *Steyermark 45207*; tree 30 ft. tall, lowland forest along Río San Román west of Chinajá, Petén, alt. 50 m., March 30, 1942, *Steyermark 45508*; small tree, Cerro Chinajá, between Finca Yalpemech and Chinajá, above source of Río San Diego, Alta Verapaz, alt. 150–700 m., April 12, 1942, *Steyermark 45575*; arbusto 1 m. alto, 6 cm. diámetro, fruto verde, en foresta alta, San Luis en camino para Poctún a kilometro 118, 3 diciembre de 1970, *Tún Ortiz 1459* (type F, two sheets, with flowers and fruits; EAP, US).

These specimens except the holotype and two Steyermark collections (31999 and 41587) are sterile but they seem to all be the same species. The fruit is said to have been bright green and soft on the outside. Most specimens have been determined as “*Enallagma sessilifolia*” and “*E. donnell-smithii*” to which they are not too closely related.

The species is distinctive because of the subcoriaceous oblanceolate or elliptic-oblanceolate leaves with secondary nerves at nearly right angle to the mid-nerve. The fruit is distinctive but fruits of some members of this genus are not known to me.

The specimens cited are all from the lowland forests along the Atlantic plain of Guatemala. The somewhat similar *Amphitecna*

*silvicola* is easily distinguished by its cauliflorous inflorescences and its curious venation underleaf and it is a resident of the mountain forests.

Dr. B. F. Kukachka has studied the juvenile wood from the type collection and comments that it agrees very well, anatomically, with that of *Amphitecna macrophylla*, the only other species for which wood is known.

***Amphitecna obovata* (Bentham) L. Wms., comb. nov.** *Crescentia obovata* Bentham, Bot. Voy. Sulph. 130, t. 46. 1845. *Enallagma obovata* Baill. ex. Schumann in Engler & Prantl, Pflanzenf. IV. 3b: 247. 1895.

A not uncommon shrub or small tree distributed in forests or in mangrove swamps near or little above sea level from southern Mexico, British Honduras, to Panama and the West Indies and to northern South America. Also in southern Florida. This is the plant which has been called *Enallagma latifolia* (Miller) Small in most all recent works. See "Excluded species," p. 26.

***Amphitecna sessilifolia* (Donn.-Sm.) L. Wms. comb. nov.** *Tabebuia sessilifolia* Donn.-Sm. Bot. Gaz. 25: 156. 1898. *Neotuerckheimia gonoclada* Donn.-Sm. Bot. Gaz. 47: 259. 1909. *Enallagma sessilifolia* Standl. Field Mus. Bot. 18: 1120. 1938.

A species of the mountains of Costa Rica. It has been attributed to Guatemala by Seibert and others but the specimens involved are mostly the lowland *A. oblanceolata*.

***Amphitecna silvicola* L. Wms. sp. nov.**

Frutex circa 2 m. altus. Folia elliptica vel oblanceolata acuminata breviter petiolata; inflorescentiae fasciculatae 1-3-floribus, pedicellis graciles; flos albus; calyx sub anthesi bilobatum, lobi obovati cochleati obtusi; corolla campanulato-infundibuliformis crenulato-lobata; stamina 4 inclusae; staminodeum cylindricum arcuatum; anthera biloculares cellulae explanatae.

A shrub about 2 m. tall, the branches angulate, becoming terete, glabrous. Leaves alternate on the new growths, elliptic or oblanceolate, acuminate, short petiolate with 7-12 lateral nerves, these lighter-marginate on the lower surfaces, the blades 6-12 cm. long and 2.2-4 cm. broad, petiole to 1 cm. long; inflorescence fascicles of 1-3 flowers on older wood from an enlarged multi-bracteolate base, pedicels about 2 cm. long, slender; flowers white; calyx closed in bud, bilaterally split in anthesis nearly to the base, each lobe obovate, somewhat cochleate, obtuse, glabrous, 15-20 mm. long and 10-12 mm. broad; corolla campanulate-funnelform, crenulate-lobate, muriculate toward the apex outside, smooth and glab-

rous within, 4–5 cm. long when mature; stamens 4, in two unequal pairs, reaching to the throat of the corolla; staminode cylindric, 3–4 mm. long, arcuate; anthers 2-celled, the cells explanate and joined through apex of anther, each cell about 5 mm. long; disc entire, obscurely lobate; young ovary elongate, smooth; style about 30 mm. long, narrowly truncate; fruits unknown.

Mexico: flowers white, [shrub] 6 ft. tall, heavily wooded slope at Lago Tsiskaw on the Guatemalan border, 30 miles east of La Trinitaria, municipio La Trinitaria, Chiapas, elevation 4,500 ft., 27 May 1965, *Breedlove 10064* (type, F).

This montane plant from middle elevations is related to *A. macrophylla* but quite distinct from it in the very much smaller leaves scattered along the new growth instead of clustered on the new growth. Flower structure seems not greatly different in the two species, and both share the curious lighter colored margins of the veins and veinlets on the lower leaf surface.

### EXCLUDED SPECIES

CRESCENTIA LATIFOLIA Miller, Gard. Dict. ed. 8. 1768. *C. cucurbitina* L. Mant. Pl. 250. 1771. *Enallagma cucurbitina* Baill. Hist. Pl. 10: 24. 1888. *E. latifolia* Small, Fl. Miami 171. 1913.—*Nomina ambigua*.

*Crescentia latifolia* has been interpreted as the not uncommon lowland plant that occurs along the coasts of Florida, Mexico, Central America, the West Indies south to northern South America. Miller's description of *Crescentia latifolia* does not fit the plant which it has generally been assumed to describe. Miller says that he had the plant under cultivation and mentions that Dr. Houstoun sent fruits from Campeachy. Whether Miller's description is based on plants grown from this Mexican seed I have no way of knowing, but I am aware of no plant from Campeche that fits Miller's description—among others the leaves described are much too small and of the wrong shape.

Dr. William T. Stearn has been kind enough to look into the herbarium of British Museum for Miller's specimen and writes that: "There is no specimen either from Miller or from Houstoun in our herbarium to typify the name *Crescentia latifolia* Miller and the annotated copy of Miller's *Dictionary*, 8th edition, indicates that Banks never received one. Hence the name must be interpreted purely from Miller's description, which is undoubtedly puzzling, as you note."

Since Miller's description fits no plant of this relationship known to me from Campeche and, from the description, it is not the plant

which has gone under this name, I have taken up, as *Amphitecna obovata*, the next available name for the plant Bentham's beautifully illustrated and described *Crescentia obovata*. See above.

**PARMENTIERA.** There are three species of *Parmentiera* in Mexico and Guatemala and four additional species have been described from Nicaragua, Costa Rica, and Panama, but these do not affect the treatment of the genus for the "Flora of Guatemala."

***Parmentiera aculeata* (HBK.) L. Wms. comb. nov.** *Crescentia aculeata* HBK. Nov. Gen. & Sp. Pl. 3: 158. 1819. *Parmentiera edulis* DC. Prodr. 9: 244. 1845. *Crescentia edulis* Moc. ex DC. l.c., *nomen nudum*. *Parmentiera aculeata* Seemann, Bot. Voy. Herald 183. 1854, *nomen nudum*.

*Crescentia aculeata* HBK. was described from Campeche, Mexico. The type specimen is in Paris, where it was annotated by N. Y. Sandwith in 1937 and later photographed by Macbride (F 39404). It has been generally assumed that the combination to *Parmentiera* was made by Seemann in Bot. Voy. Herald 183. 1854. The name given by Seemann, in text, is a *nomen nudum*, for he cited no basionym and gave no description. He did say "The *P. aculeata* Seem., is founded on a specimen in Hooker's Herbarium." Therefore *Parmentiera aculeata* Seem. is not based on the type of *Crescentia aculeata* and is nothing more than an unfortunate *nomen nudum*, not a new combination. It does not prevent the proper combination to *Parmentiera* being made.

*Parmentiera edulis* DC. Prodr. 9: 244. 1845, is based upon an unpublished Mociño (Sessé & Mociño) drawing in the De Candolle herbarium (phototype F, 30770) for De Candolle cites an unpublished name "*Crescentia edulis* Moc. fl. Mex. ic. ined. non Desv." and used this specific name for his *Parmentiera edulis*. The illustration is the type for both the generic and the specific names.

A comparison of these type photographs of *Crescentia aculeata* HBK. and *Parmentiera edulis* DC. leaves no doubt that they represent the same species, one that doubtless has been carried about by man for its edible (hardly) fruits. Pringle's No. 7524 from Oaxaca, Mexico, is an excellent representation of this species, showing the large corollas as on the type of *P. aculeata* HBK. (which shows no fruits) and the thick costate fruits as on the type illustration of *P. edulis*. The leaves are so nearly alike on both types that there can be no question that only one species is involved.

***Parmentiera millspaughiana* L. Wms. sp. nov.**

Frutices vel arbores parvae aculeatae usque ad 6 m. altae. Folia trifoliolata vel integra, foliolis late orbiculari-spathulatis acutis vel obtusis vel rotundatis, basi cuneata; petioli alati vel exalati; inflorescentia terminalis vulgo uniflora; calyx spathatheus; corolla infundibuliformis; fructus teretes elongati laeves obscure costati.

Shrubs or small trees to 6 m. tall; the branches slender terete, grayish, with alternate or paired spines at the nodes, these sometimes (the upper ones) bearing small leaves at their apices; leaves trifoliolate or sometimes simple, obscurely glandular-lepidote and sparsely puberulent along the veins below, glabrous above, the leaflets broadly orbicular-spathulate, acute or usually obtuse or rounded at the apex, cuneate to the base, the terminal leaflet or simple leaf 1–2.5 cm. long and 0.6–2 cm. broad, the lateral leaflets similar but smaller, petioles to 3 cm. long, alate or not, usually puberulent, those of simple leaves almost lacking; inflorescence terminal, mostly 1-flowered, pedicels about 1–2 cm. long, slender bibracteolate near the base; calyx spathaceous, up to 2.5 cm. long; corolla infundibuliform, about 4–4.5 cm. long; fruits terete, elongated, smooth or only obscurely costate, the apex apiculate, 13–25 cm. long and about 1–1.5 cm. in diameter, yellow when ripe.

Mexico: shrub 12 ft. high, common about Izamal, producing its neutral green flowers throughout the year, 1895–96, *Gaumer 338* (type, F; AA; MO; NY; US); San Anselmo, *Gaumer 1613*; *Catcuuc; cat*; shrub 15 ft. high and from 1–2 in. in diameter, it blooms in May, forests of Suitun, *Gaumer & Sons 23289*; shrub 8 ft. tall, sometimes higher, seldom has more than one flower on at a time, its fruit when ripe is yellow, in Suitun woods, October, 1916, *Gaumer & Sons 23439*; small 3 m. tree or bush, Chan Laguna, Campeche, Dec. 5, 1931, *Lundell 1021*; Mérida, May 25, 1865, *Schott 382*; Mérida, June 28, 1865, *Schott 382* (sic).

Related to *Parmentiera parviflora* Lundell of the Yucatán Peninsula in Mexico and Guatemala and to *P. cerifera* Seemann of Panama. It is easily distinguished from both by its orbicular-spathulate, obtuse leaflets; from *P. parviflora* by its much larger flowers and larger and relatively thinner fruit; from *P. cerifera* by its terminal, not cauliflorous, inflorescence, much smaller fruits, and great geographical separations.

I am pleased to name this plant for Dr. Charles F. Millspaugh, first scientific curator at Field Museum and for many years head of the Botany Department; first American botanist with an especial interest in the flora of Yucatan and the author of the first serious contributions to the Yucatecan flora; my predecessor at Field Museum by 65 years. It was Dr. Millspaugh who brought all the specimens cited above, except one, to the herbarium which he founded.

Dr. Siebert (in Carnegie Inst. Wash. Publ. 552: 385. 1940) used the name "*P. aculeata* (HBK.) Seem." for this plant in exactly the same circumscription. It is shown above that *P. aculeata* (HBK.) L. Wms. includes *P. edulis* DC. and must apply to the more common and widespread species. No name has been found which applies to this long recognized taxon.

***Parmentiera parviflora*** Lundell, Lloydia 3: 211. 1940 is a little known species from the Yucatan Peninsula of Mexico and Guatemala that is easily distinguished from all species of the genus by its relatively small flowers. It has been found for the first time in Guatemala near Santa Elena, Dept. Petén, *Tún* 835.



















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